What is claimed is;

1. A two-terminal organic electronic device formed on a substrate, the device comprising:

a first electrode;

a second electrode spaced from the first electrode; and

a conductive organic thin film electrically connecting the first electrode and the second electrode;

wherein the conductive organic thin film comprises an organic molecular group comprising organic molecules each having a light-responsive group and has a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

2. A two-terminal organic electronic device according to claim 1, wherein the conductive organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

3. A two-terminal organic electronic device according to claim 1, wherein the conductivity of the conductive network changes according to the amount of light with which the conductive organic thin film is irradiated.

4. A two-terminal organic electronic device according to claim 3, wherein the conductivity of the conductive network is shifted to a first conductivity or a second conductivity by irradiation of the conductive

organic thin film with a first light or a second light, respectively, and is maintained at the first conductivity or the second conductivity, respectively, after irradiation is terminated, the first light and the second light having different wavelengths.

5. A two-terminal organic electronic device according to claim 1, wherein the light-responsive group is a photoisomerizable group.

6. A two-terminal organic electronic device according to claim 5, wherein the photoisomerizable group is an azo group.

7. A two-terminal organic electronic device according to claim 1, wherein the conductive network comprises at least one conjugated system selected from the group consisting of a polyacetylene-based, a polydiacetylene-based, a polypyrrole-based, a polythiophene-based, and a polyacene-based conjugated system.

8. A three-terminal organic electronic device formed on a substrate, the device comprising:

a first electrode;

a second electrode spaced from the first electrode;

a conductive organic thin film electrically connecting the first electrode and the second electrode; and

a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom;

wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between

itself and the first electrode or itself and the second electrode; and the conductive organic thin film comprises an organic molecular group comprising organic molecules each having a polar group and has a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

9. A three-terminal organic electronic device according to claim 8, wherein the conductive organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

10. A three-terminal organic electronic device according to claim 8, wherein change in the conductivity of the conductive network is effected by the electric field applied across the conductive organic thin film.

11. A three-terminal organic electronic device according to claim 8, wherein the polar group is a polarizable group that is polarized when an electric field is applied.

12. A three-terminal organic electronic device according to claim 11, wherein the polarizable group is a carbonyl group or an oxycarbonyl group.

13. A three-terminal organic electronic device according to claim 8, wherein the conductive network comprises at least one conjugated system selected from the group consisting of a polyacetylene-based, a polydiacetylene-based, a polythiophene-based, a polypyrrole-based, and a polyacene-based conjugated system.

14. A method of producing a two-terminal organic electronic device formed on an insulating substrate or an insulating film-covered substrate that is a substrate having an insulating film formed thereon, the method comprising the steps of:

forming an organic thin film comprising an organic molecular group comprising organic molecules each having a light-responsive group and a polymerizable group that bonds by conjugated bonds;

forming a conductive network by bonding the organic molecules making up the organic thin film to one another by conjugated bonds; and

forming a first electrode and a second electrode spaced from each other so that the first electrode and the second electrode contact the conductive network.

15. A method of producing a three-terminal organic electronic device formed on an insulating substrate or an insulating film-covered substrate that is a substrate having a first insulating film formed thereon, the method comprising the steps of:

forming a third electrode;

forming an organic thin film comprising an organic molecular group comprising organic molecules each having a polar group and a polymerizable group that bonds by conjugated bonds so that the third electrode is covered either directly or with a second insulating film disposed therebetween;

forming a conductive network by bonding the organic molecules

making up the organic thin film to one another by conjugated bonds; and

forming a first electrode and a second electrode spaced from each other and from the third electrode so that the first electrode and the second electrode contact the conductive network.

16. A method of producing an organic electronic device according to claims 14 or 15, wherein the organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

17. A method of producing an organic electronic device according to claims 14 or 15, wherein chemisorption or the Langmuir-Blodgett technique is utilized in the step of forming an organic thin film.

18. A method of producing an organic electronic device according to claims 14 or 15, wherein in the step of forming a conductive network, the bonding of the organic molecules making up the organic thin film to one another by conjugated bonds to form a conductive network is achieved by polymerization or polymerization followed by crosslinking.

19. A method of producing a two-terminal organic electronic device according to claim 14, wherein the light-responsive group is a photoisomerizable group.

20. A method of producing a two-terminal organic electronic device according to claim 19, wherein the photoisomerizable group is an azo group.

21. A method of producing a three-terminal organic electronic device according to claim 15, wherein the polar group is a polarizable group that is polarized when an electric field is applied.

22. A method of producing a three-terminal organic electronic device according to claim 21, wherein the polarizable group is a carbonyl group or an oxycarbonyl group.

23. A method of producing an organic electronic device according to claims 14 or 15, wherein the polymerizable group is selected from the group consisting of a catalytically polymerizable group, an electrolytically polymerizable group, and a polymerizable group that is polymerized through energy beam irradiation.

24. A method of producing an organic electronic device according to claims 14 or 15, wherein:

the polymerizable group is an electrolytically polymerizable group;

the step of forming a first electrode and a second electrode is carried out before the step of forming a conductive network; and

the step of forming a conductive network comprises applying a voltage between the first electrode and the second electrode so that the electrolytically polymerizable group of each organic molecule of the organic molecular group undergoes an electrolytic-polymerization reaction to form a conductive network.

25. A method of producing a two-terminal organic electronic device according to claim 14, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group : and

the method further comprises, after the step of forming the first electrode and the second electrode, a step of forming a coating film on the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

26. A method of producing a two-terminal organic electronic device according to claim 14, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ;

the step of forming a first electrode and a second electrode is carried out before the step of forming a conductive network; and

the step of forming a conductive network includes forming a coating film on the organic thin film while forming the conductive network of the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic

thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

27. A method of producing a three-terminal organic electronic device according to claim 15, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ; and

and the method further comprises, after the step of forming the first electrode and the second electrode, a step of forming a coating film on the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

28. A method of producing a three-terminal organic electronic device according to claim 15, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ;

the step of forming a first electrode and a second electrode is carried out before the step of forming a conductive network; and

the step of forming a conductive network includes forming a coating film on the organic thin film while forming the conductive network of the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

29. A method of operating a two-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, and a conductive organic thin film electrically connecting the first electrode and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a light-responsive group and the

conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method comprising:

switching current flowing between the first electrode and the second electrode by irradiating the conductive organic thin film with a light while a voltage is applied between the first electrode and the second electrode to change the conductivity of the conductive network.

30. A method of operating a three-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom, wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode and the conductive organic thin film comprises an organic molecular group comprising organic molecules each having a polar group and has a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method comprising:

switching current flowing between the first electrode and the second electrode by applying a voltage between the first electrode or the second electrode and the third electrode while a voltage is applied

between the first electrode and the second electrode to change the conductivity of the conductive network.

31. A method of operating a two-terminal organic electronic device according to claim 29, wherein the light-responsive group is a photoisomerizable group, and the light is a first light or a second light, respectively, the first light and the second light having differing wavelengths.

32. A method of operating a two-terminal organic electronic device according to claim 31, wherein the photoisomerizable group is an azo group.

33. A method of operating a two-terminal organic electronic device according to claim 31, wherein the first light or the second light are ultraviolet rays or visible rays, respectively.

34. A method of operating a three-terminal organic electronic device according to claim 30, wherein the polar group is a polarizable group that is polarized when an electric field is applied.

35. A method of operating a three-terminal organic electronic device according to claim 34, wherein the polarizable group is a carbonyl group or an oxycarbonyl group.

36. A method of operating an organic electronic device according to claims 29 or 30, wherein the conductive organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular

film and the monomolecular built-up film being fixed to the substrate.

37. A liquid crystal display device comprising an array substrate having a plurality of switching devices aligned and disposed in a matrix on a first substrate and a first orientation film formed thereon, a color filter substrate having a plurality of color elements aligned and disposed in a matrix on a second substrate and a second orientation film formed thereon, and a liquid crystal sealed between the array substrate and the color filter substrate, the array substrate and the color filter substrate arranged opposing each other with the first orientation film and the second orientation film on the inside, the liquid crystal display device wherein:

each of the switching devices is a three-terminal organic electronic device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the first substrate and the conductive organic thin film and insulated therefrom, wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a polar group and the conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

38. An electroluminescent display device comprising an array substrate having a plurality of switching devices aligned and disposed in a matrix on a substrate, a common electrode opposed to the array substrate, and a light-emitting layer comprising a fluorescent material which emits light when an electric field is applied, the light-emitting layer formed between the array substrate and the common electrode, the electroluminescent display device wherein:

each of the switching devices is a three-terminal organic electronic device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom, wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a polar group and the conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

39. An electroluminescent display device according to claim 38, wherein the fluorescent material comprises three types of fluorescent materials, those which emit red, blue and green light, respectively, and are

aligned and disposed to achieve color display.

40. A method of producing a liquid crystal display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a first substrate such that they are arranged in a matrix, and forming a first orientation film thereon, forming a color filter substrate by forming color elements on a second substrate such that they are arranged in a matrix formation and forming a second orientation film thereon, and arranging the array substrate and the color filter substrate such that they face each other at a specified gap, the first orientation film and the second orientation film being on the inside, filling the space between the array substrate and the color filter substrate with a liquid crystal, and sealing the liquid crystal, the method wherein:

each of the switching devices is a three-terminal organic electronic device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the first substrate and the conductive organic thin film and insulated therefrom, wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a polar group and the conductive organic thin film having a conductive network in which

the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

41. A method of producing an electroluminescent display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a substrate such that they are arranged in a matrix, forming a light-emitting layer on the array substrate, the light-emitting layer comprising a fluorescent material which emits light when a voltage is applied, and forming a common electrode by forming a common electrode film on the light-emitting layer, the method wherein:

each of the switching devices is a three-terminal organic electronic device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom, wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a polar group and the conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds.

42. A method of producing an electroluminescent display device

according to claim 41, wherein the fluorescent material comprises three types of fluorescent materials, those which emit red, blue and green light, respectively, and are formed at specified positions to achieve color display in the step of forming a light-emitting layer.

43. A method of producing a functional organic thin film fixed to a specified portion of a surface of a substrate by covalent bonds, the method comprising the steps of:

preliminarily treating the substrate by performing an active hydrogen exposure treatment on the specified portion of the surface of the substrate to make the specified portion into a region having a higher density of exposed active hydrogens than a portion other than the specified portion; and

forming the functional organic thin film fixed to the specified portion of the surface of the substrate by covalent bonds by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens and a functional bonding chain to react the organic molecules and active hydrogens in the region.

44. A method of producing a functional organic thin film according to claim 43, wherein the substrate is such that active hydrogens are not exposed on the surface.

45. A method of producing a functional organic thin film according to claim 43, wherein the specified portion has an area of 1000 μm^2 or less.

46. A method of producing a functional organic thin film according to claim 43, wherein the functional bonding chain comprises at least one functional group selected from the group consisting of a light-responsive group, an electric field-responsive group, and a polymerizable group that bonds by conjugated bonds.

47. A method of producing a functional organic thin film according to claim 43, wherein the functional organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

48. A method of producing a functional organic thin film according to claim 44, wherein the substrate is a water-repellent single layer substrate or a layered substrate wherein a water-repellent coating film is formed on a surface of a substrate material.

49. A method of producing a functional organic thin film according to claim 48, wherein the water-repellent single layer substrate comprises a water repellent synthetic resin.

50. A method of producing a functional organic thin film according to claim 49, wherein the synthetic resin is an acrylic resin, a polycarbonate resin, or a polyethersulfone resin.

51. A method of producing a functional organic thin film according to claim 48, wherein the water-repellent coating film comprises an acrylic resin, a polycarbonate resin, or a polyethersulfone resin.

52. A method of producing a functional organic thin film according to claim 43, wherein the step of preliminarily treating the substrate is such that the active hydrogen exposure treatment is carried out by oxidizing the specified portion of the surface of the substrate and supplying active hydrogens to the specified portion.

53. A method of producing a functional organic thin film according to claim 52, wherein the oxidizing of the specified portion is carried out in an atmosphere containing oxygen atoms and hydrogen atoms by at least one of excimer UV light irradiation, ultraviolet irradiation, plasma treatment, and corona treatment.

54. A method of producing a functional organic thin film according to claim 43, wherein the substrate comprises a layered substrate wherein a water-repellent organic film is formed on a surface of a substrate material having active hydrogens exposed thereon, and the step of preliminarily treating the substrate is such that the active hydrogen exposure treatment is carried out by oxidizing the specified portion of the surface of the substrate to remove the water-repellent organic film from the specified portion, whereby active hydrogens are exposed.

55. A method of producing a functional organic thin film according to claim 54, wherein the oxidizing of the specified portion is carried out under an atmosphere containing oxygen by at least one of excimer UV light irradiation, ultraviolet irradiation, plasma treatment, and corona treatment.

56. A method of producing a functional organic thin film according to claim 43, wherein a mask is formed on the portion other than the specified portion of the surface of the substrate before the active hydrogen exposure treatment is performed on the substrate.

57. A method of producing a functional organic thin film according to claim 56, wherein the step of forming the functional organic thin film is carried out after the mask has been removed.

58. A method of producing a functional organic thin film according to claim 56, wherein the step of forming the functional organic thin film is carried out before the mask is removed.

59. A method of producing a functional organic thin film according to claim 43, wherein:

the functional group that reacts with active hydrogens is selected from the group consisting of a halosilyl group, an isocyanate group, and an alkoxysilyl group; and

the step of forming the functional organic thin film is such that the contacting of the region having a higher density of exposed active hydrogens with the organic molecules is carried out using a chemisorption solution wherein the organic molecules and a nonaqueous organic solvent are mixed together.

60. A method of producing a functional organic thin film according to claim 43, further comprising a step of washing the surface the substrate with a nonaqueous organic solvent after the steps of preliminarily treating

the substrate and forming the functional organic thin film.

61. A method of producing a functional organic thin film fixed to a specified portion of a surface of a substrate by covalent bonds, comprising the steps of:

preliminarily treating the substrate by performing an active hydrogen removing treatment on a portion other than the specified portion of the surface of the substrate to make the specified portion into a region having a higher density of exposed active hydrogens than the portion other than the specified portion; and

forming the functional organic thin film fixed to the specified portion of the surface of the substrate by covalent bonds by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens and a functional bonding chain to react the organic molecules and active hydrogens in the region.

62. A method of producing a functional organic thin film according to claim 61, wherein the substrate is such that active hydrogens are exposed on the surface.

63. A method of producing a functional organic thin film according to claim 61, wherein the specified portion has an area of 1000 μm^2 or less.

64. A method of producing a functional organic thin film according to claim 61, wherein the functional bonding chain comprises at least one functional group selected from the group consisting of a light-responsive

group, an electric field-responsive group, and a polymerizable group that bonds by conjugated bonds.

65. A method of producing a functional organic thin film according to claim 61, wherein the functional organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

66. A method of producing a functional organic thin film according to claim 62, wherein the substrate is a hydrophilic single layer substrate or a layered substrate wherein a hydrophilic coating film is formed on a surface of a substrate material.

67. A method of producing a functional organic thin film according to claim 66, wherein the hydrophilic single layer substrate comprises a metal having an oxidized surface, silicon, silicon nitride, silica, or glass.

68. A method of producing a functional organic thin film according to claim 66, wherein the hydrophilic coating comprises a metal oxide, silicon, silicon nitride, silica, or glass.

69. A method of producing a functional organic thin film according to claim 61, wherein the step of preliminarily treating the substrate is such that the active hydrogen removing treatment is a chemical treatment performed to remove active hydrogens from the portion of the surface of the substrate other than the specified portion.

70. A method of producing a functional organic thin film according to

claim 69, wherein the chemical treatment is such that the portion other than the specified portion of the surface of the substrate is contacted with organic molecules each having a functional group that reacts with active hydrogens to induce a reaction between the organic molecules and the active hydrogens of the portion other than the specified portion of the substrate.

71. A method of producing a functional organic thin film according to claim 61, wherein the step of preliminarily treating the substrate is such that the active hydrogen removing treatment is a physical treatment performed to remove active hydrogens from the portion of the surface of the substrate other than the specified portion.

72. A method of producing a functional organic thin film according to claim 71, wherein the physical treatment is such that covalent bonds between the substrate and the active hydrogens are broken by irradiating the portion other than the specified portion of the surface of the substrate with light in a vacuum.

73. A method of producing a functional organic thin film according to claim 61, wherein a mask is formed on the specified portion of the surface of the substrate before the active hydrogen removing treatment is performed and is removed before the step of forming the functional organic thin film.

74. A method of producing a functional organic thin film according to claim 73, wherein:

the functional group that reacts with active hydrogens is selected from the group consisting of a halosilyl group, an isocyanate group, and an alkoxysilyl group; and

the step of forming the functional organic thin film is such that the contacting of the region having a higher density of exposed active hydrogens with the organic molecules is carried out using a chemisorption solution wherein the organic molecules and a nonaqueous organic solvent are mixed together.

75. A method of producing a functional organic thin film according to claim 73, further comprising a step of washing the surface of the substrate with a nonaqueous organic solvent after the steps of preliminarily treating the substrate and forming the functional organic thin film.

76. A method of producing a two-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, and a conductive organic thin film electrically connecting the first electrode and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a light-responsive group and the conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method comprising the steps of:

preliminarily treating the substrate by performing an active hydrogen exposure treatment on a specified portion of a surface of the substrate to make the specified portion into a region having a

higher density of exposed active hydrogens than a portion other than the specified portion;

forming a film by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a light-responsive group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the region to react such that an organic molecular group comprising the organic molecules is fixed to the specified portion of the surface of the substrate by covalent bonds;

forming the conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming the first electrode and the second electrode on the substrate.

77. A method of producing three-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, and the conductive organic thin film comprises an organic molecular group comprising organic molecules each having a polar

group and has a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method comprising the steps of:

forming the third electrode on a surface of the substrate;

preliminarily treating the substrate by performing an active hydrogen exposure treatment on a specified portion of the surface of the substrate to make the specified portion into a region having a higher density of exposed active hydrogens than a portion other than the specified portion;

forming a film by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the region to react such that an organic molecular group comprising the organic molecules are fixed to the specified portion of the surface of the substrate by covalent bonds;

forming the conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming the first electrode and the second electrode on the substrate.

78. A method of producing a two-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, and a conductive organic thin film

electrically connecting the first electrode and the second electrode, the conductive organic thin film comprising an organic molecular group comprising organic molecules each having a light-responsive group and the conductive organic thin film having a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method of producing a two-terminal organic electronic device comprising the steps of:

preliminarily treating the substrate by performing an active hydrogen removing treatment on a portion other than a specified portion of a surface of the substrate to make the specified portion into a region having a higher density of exposed active hydrogens than the portion other than the specified portion;

forming a film by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a photoisomerizable group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the region to react such that an organic molecular group comprising organic molecules is fixed to the specified portion of the surface of the substrate by covalent bonds;

forming the conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming the first electrode and the second electrode on the substrate.

79. A method of producing three-terminal organic electronic device formed on a substrate, the device comprising a first electrode, a second electrode spaced from the first electrode, a conductive organic thin film electrically connecting the first electrode and the second electrode, and a third electrode sandwiched between the substrate and the conductive organic thin film and insulated therefrom wherein the third electrode controls an electric field across the conductive organic thin film by application of a voltage between itself and the first electrode or itself and the second electrode, and the conductive organic thin film comprises an organic molecular group comprising organic molecules each having a polar group and has a conductive network in which the organic molecules making up the organic molecular group are bonded to one another by conjugated bonds, the method comprising the steps of:

forming the third electrode on a surface of the substrate;

preliminarily treating the substrate by performing an active hydrogen removing treatment on a portion other than a specified portion of the surface of the substrate to make the specified portion into a region having a higher density of exposed active hydrogens than the portion other than the specified portion;

forming a film by contacting the region having a higher density of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the region to react such that an organic molecular group comprising the

organic molecules is fixed to the specified portion of the surface of the substrate by covalent bonds;

forming the conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming the first electrode and the second electrode on the substrate.

80. A method of producing an organic electronic device according to claims 76 or 77, wherein the substrate is such that active hydrogens are not exposed on the surface.

81. A method of producing an organic electronic device according to claims 76 or 77, wherein the active hydrogen exposure treatment is such that the specified portion of the surface of the substrate is oxidized and supplied with active hydrogens.

82. A method of producing an organic electronic device according to claims 76 and 77, wherein the substrate is a layered substrate wherein a water-repellent organic film is formed on a surface of a substrate material having active hydrogens exposed thereon, and the active hydrogen exposure treatment is such that the specified portion of the surface of the layered substrate is oxidized to remove the water-repellent organic film, whereby active hydrogens are exposed.

83. A method of producing an organic electronic device according to claims 78 or 79, wherein the substrate is such that active hydrogens are exposed on the surface.

84. A method of producing an organic electronic device according to claims 78 or 79, wherein the active hydrogen removing treatment is a chemical treatment performed to remove active hydrogens from the portion other than the specified portion of the surface of the substrate.

85. A method of producing an organic electronic device according to claims 78 and 79, wherein the active hydrogen removing treatment is a physical treatment performed to remove active hydrogens from the portion other than the specified portion of the surface of the substrate.

86. A method of producing an organic electronic device according to any of claims 76 to 79, wherein the conductive organic thin film is a monomolecular film or a monomolecular built-up film, the monomolecular film and the monomolecular built-up film being fixed to the substrate.

87. A method of producing an organic electronic device according to any of claims 76 to 79, wherein chemisorption or the Langmuir-Blodgett technique is utilized in the step of forming a film.

88. A method of producing an organic electronic device according to any of claims 76 to 79, wherein the polymerizable group is selected from the group consisting of a catalytically polymerizable group, an electrolytically polymerizable group, and a polymerizable group that is polymerized through energy beam irradiation.

89. A method of producing a two-terminal organic electronic device according claims 76 or 78, wherein the light-responsive group is a photoisomerizable group.

90. A method of producing a two-terminal organic electronic device according to claims 76 or 78, wherein:

the polymerizable group is an electrolytically polymerizable group;

the step of forming the first electrode and the second electrode is carried out before the step of forming the conductive network; and

the step of forming the conductive network is such that each electrolytically polymerizable group is subjected to an electrolytic-polymerization reaction to form the conductive network.

91. A method of producing a two-terminal organic electronic device according to claims 76 or 78, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group : and

the method further comprises, after the step of forming the first electrode and the second electrode, a step of forming a coating film on the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic

thin film.

92. A method of producing a two-terminal organic electronic device according to claims 76 or 78, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ;

the step of forming the first electrode and the second electrode is carried out before the step of forming the conductive network; and

the step of forming the conductive network includes forming a coating film on the organic thin film while forming the conductive network of the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

93. A method of producing a three-terminal organic electronic device according to claims 77 or 79, wherein the polar group is a polarizable group that is polarized when an electric field is applied.

94. A method of producing a three-terminal organic electronic device

according to claims 77 or 79, wherein:

the polymerizable group is an electrolytically polymerizable group;

the step of forming the first electrode and the second electrode is carried out before the step of forming the conductive network; and

the step of forming the conductive network is such that by applying a voltage between the first electrode and the second electrode, each electrolytically polymerizable group is subjected to an electrolytic-polymerization reaction to form the conductive network.

95. A method of producing a three-terminal organic electronic device according to claims 77 or 79, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ; and

the method further comprises, after the step of forming the first electrode and the second electrode, a step of forming a coating film on the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic

thin film.

96. A method of producing a three-terminal organic electronic device according to claims 77 or 79, wherein:

the polymerizable group is an electrolytically polymerizable group that is a pyrrolyl group or a thienyl group ;

the step of forming the first electrode and the second electrode is carried out before the step of forming the conductive network; and

the step of forming the conductive network includes forming a coating film on the organic thin film while forming the conductive network of the organic thin film and an additional conductive network in the coating film by immersing the substrate having the organic thin film formed thereon in an organic solvent in which organic molecules each having a light-responsive group and a functional group that is a pyrrolyl group or a thienyl group are dissolved and applying voltages between the first electrode and the second electrode and between the first electrode or the second electrode and an external electrode, respectively, the external electrode being contacted with the organic solvent and disposed above the organic thin film.

97. A method of producing a liquid crystal display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a first substrate such that they are arranged in a matrix and forming a first orientation film thereon, forming a color filter substrate by forming color elements on a second substrate such that they are arranged

in a matrix and forming a second orientation film thereon, and arranging the array substrate and the color filter substrate such that they face each other at a specified gap, the first orientation film and the second orientation film being on the inside, filling the space between the array substrate and the color filter substrate with a liquid crystal, and sealing the liquid crystal, the method wherein:

the step of forming an array substrate comprises the substeps of:

forming third electrodes in a matrix on a surface of the first substrate;

preliminarily treating the first substrate by performing an active hydrogen exposure treatment on specified portions of the surface of the first substrate to make the specified portions into regions having higher densities of exposed active hydrogens than portions other than the specified portions;

forming a film by contacting the regions having higher densities of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the regions to react such that an organic molecular group comprising the organic molecules is fixed to the specified portions of the surface of the first substrate by covalent bonds;

forming a conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds;

forming first electrodes and second electrodes on the first substrate;

and

forming the first orientation film on the first substrate having the first electrodes, the second electrodes, and the third electrodes formed thereon.

98. A method of producing an electroluminescent display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a substrate such that they are arranged in a matrix, forming a light-emitting layer on the array substrate, the light-emitting layer comprising a fluorescent material which emits light when a voltage is applied, and forming a common electrode by forming a common electrode film on the light-emitting layer, the method wherein:

the step of forming an array substrate step comprises the substeps of:

forming third electrodes in a matrix on a surface of the substrate;

preliminarily treating the substrate by performing an active hydrogen exposure treatment on specified portions of the surface of the substrate to make the specified portions into regions having higher densities of exposed active hydrogens than portions other than the specified portions;

forming a film by contacting the regions having higher densities of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the regions to react such that an organic molecular group comprising the

organic molecules is fixed to the specified portions of the surface of the substrate by covalent bonds; and

forming a conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming first electrodes and second electrodes on the substrate.

99. A method of producing a liquid crystal display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a first substrate such that they are arranged in a matrix and forming a first orientation film thereon, forming a color filter substrate by forming color elements on a second substrate such that they are arranged in a matrix and forming a second orientation film thereon, and arranging the array substrate and the color filter substrate such that they face each other at a specified gap, the first orientation film and the second orientation film being on the inside, filling the space between the array substrate and the color filter substrate with a liquid crystal, and sealing the liquid crystal, the method wherein:

the step of forming an array substrate comprises the substeps of:

forming third electrodes in a matrix on a surface of the first substrate;

preliminarily treating the first substrate by performing an active hydrogen removing treatment on portions other than specified portions of the surface of the substrate to make the specified portions into regions having higher densities of exposed active hydrogens than the portions other than the specified portions;

forming a film by contacting the regions having higher densities of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing organic molecules and active hydrogens in the region to react such that the organic molecular group comprising the organic molecules is fixed to the specified portions of the surface of the substrate by covalent bonds;

forming a conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds;

forming first electrodes and second electrodes on the first substrate; and

forming the first orientation film on the first substrate having the first electrodes, the second electrodes, and the third electrodes formed thereon.

100. A method of producing an electroluminescent display device comprising the steps of forming an array substrate by forming a plurality of switching devices on a substrate such that they are arranged in a matrix, forming a light-emitting layer on the array substrate, the light-emitting layer comprising a fluorescent material which emits light when a voltage is applied, and forming a common electrode by forming a common electrode film on the light-emitting layer, the method wherein:

the step of forming an array substrate comprises the substeps of:

forming third electrodes in a matrix on a surface of the substrate;

preliminarily treating the substrate by performing an active hydrogen removing treatment on portions other than specified portions of the surface of the substrate to make the specified portions into regions having higher densities of exposed active hydrogens than the portions other than the specified portions;

forming a film by contacting the regions having higher densities of exposed active hydrogens with organic molecules each having a functional group that reacts with active hydrogens, a polar group, and a polymerizable group that bonds by conjugated bonds and inducing the organic molecules and active hydrogens in the region to react such that the organic molecular group comprising the organic molecules is fixed to the specified portions of the surface of the substrate by covalent bonds;

forming a conductive network by bonding the organic molecules making up the organic molecular group to one another by conjugated bonds; and

forming first electrodes and second electrodes on the substrate.

101. A method of producing an electroluminescent display device according to claims 98 or 100, wherein the fluorescent material comprises three types of fluorescent materials, those which emit red, blue, and green light, respectively, and are formed at specified positions in the step of forming a light-emitting layer to achieve color display.